

CLAIMS

1. An improved separation element of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least two opposing stalk rolls connected to said power source,
 - c. said stalk rolls having at least one flute,
 - d. said flute having at least one penetration point; and,wherein said penetration point is composed of hardened material.
2. An improved separation element of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least two opposing stalk rolls connected to said power source,
 - c. said stalk rolls having at least one flute,
 - d. said flute having a knife edge; and,wherein said entire knife edge is composed of hardened material.
3. The separation element of said corn head row unit according to claim 2 wherein the knife edge has a predetermined surface slope.
4. The separation element of said corn head row unit according to claim 3 wherein the knife edges have a forward slope relative to the direction of rotation of each of said stalk rolls.
5. The separation element of said corn head row unit according to claim 4 wherein the knife edges of opposing flutes have a predetermined surface slope and the angle of said slopes of opposing flutes are identical.
6. The separation element of said corn head row unit according to claim 2 wherein the opposing flutes are tapered.
7. The separation element of said corn head row unit according to claim 2 wherein the opposing flutes intermesh.
8. The separation element of said corn head row unit according to claim 2 wherein the radius of the opposing flute surfaces is reduced in discrete increments along the length of the stalk roll.

9. The separation element of said corn head row unit according to claim 2 wherein the opposing flutes surfaces have a plurality of radii along the length of the stalk roll.
10. The separation element of said corn head row unit according to claim 2 wherein the radius of the leading edge of the flute is less than the trailing edge of the flute in relation to the direction of rotation of the stalk roll.
11. An improved separation element of a corn head row unit comprising:
- a. a source of power for rotation,
 - b. at least two opposing stalk rolls connected to said power source,
 - c. each of said stalk rolls having at least one flute wherein the flutes are opposite each other,
 - d. said flutes having a knife edge; and,
 - e. said entire knife edge is composed of hardened material.
12. The separation element of said corn head row unit according to claim 11 wherein the distance between said opposing flutes decreases along the length of said stalk rolls.
13. The separation element of said corn head row unit according to claim 12 wherein the knife edges have a forward slope in relation to the direction of rotation of said stalk rolls.
14. The separation element of said corn head row unit according to claim 13 wherein the knife edge has a predetermined surface slope per stalk roll and said the angles of said slopes are identical.
15. The separation element of said corn head row unit according to claim 11 wherein the radius of the opposing flute surfaces is reduced in discrete increments along the length of the stalk roll.
16. The separation element of said corn head row unit according to claim 11 wherein the opposing flutes surfaces have a plurality of radii along the length of the stalk roll.
17. The separation element of said corn head row unit according to claim 11 wherein the radius of the leading edge of the flute is less than the trailing edge of the flute in relation to the direction of rotation of the stalk roll.

18. The separation element of said corn head row unit according to claim 11 wherein the opposing flutes are substantially in the shape of a trapezoid.

19. The separation element of said corn head row unit according to claim 11 wherein a substantially trapezoidal shaped void created is between the opposing flutes when opposite each.

20. An improved method of engaging corn plants with a corn head row unit comprising the steps of:

- a. engaging the corn plant with a plurality of rotational elements,
- b. pinching the corn plant between said rotational elements,
- c. penetrating the corn plant stalk with said rotational elements a pre-determined penetration depth, wherein the pre-determined penetration depth of each of said rotational elements is less than half the diameter of the corn plant stalk,
- d. pulling the corn plant stalk with the rotational elements,
- e. said penetrating, pinching and pulling steps repeatedly lacerating the corn plant stalk along its length and width; and,
- f. separating the corn plant ear from the corn plant stalk and husk.